Defense Logistics Agency

Defense Supply Center Richmond

E L L I S

Enterprise Linked Logistics Information Source

Executive Summary

Defense Logistics Agency (DLA) stands at the forefront of the revolution in electronic commerce and information management, making millions of critical supply items available to forces worldwide at the click of a computer mouse.

Performance Based Logistics is the concept by which DLA monitors and controls the enterprise-wide supply chain. Monitoring the supply chain will enable DLA customers to make smart maintenance decisions and will provide information for their own supply chain planning. Additionally, Measuring Supplier Performance is a practical way to help to the shrinking Supplier base of the Department of Defense.

Supply Chain Visibility

The Defense Supply Center Richmond (DSCR) Acquisition Support Division conducted a survey of all supply chain stakeholders to assess their needs. The message was loud and clear - stakeholders wanted reliable performance and visibility of all links in the chain.

The ELLIS (Enterprise Linked Logistics Information Source) project was undertaken to enable the execution of the Performance Based Logistics contracts in DLA. ELLIS is an Electronic Data Interchange (EDI) centric web-based tool that provides visibility of the supply chain enterprise through a single information source.

- **Visibility Enables Collaboration**
- **Visibility Enables Confidence**
- **Visibility Enables Closely Aligned Metrics**
- **Visibility Enables Proactive Problem Resolution**

Section 1 General Information and Project Complexity

1. Provide the name of the Submitting Organization

Defense Logistics Agency (DLA)
Defense Supply Center Richmond (DSCR)

2. Identify the Reporting Organization Unit

DSCR Acquisition Support Division (DSCR-KB)

3. Provide a brief description of the overall business objectives, product lines and mission of the organization

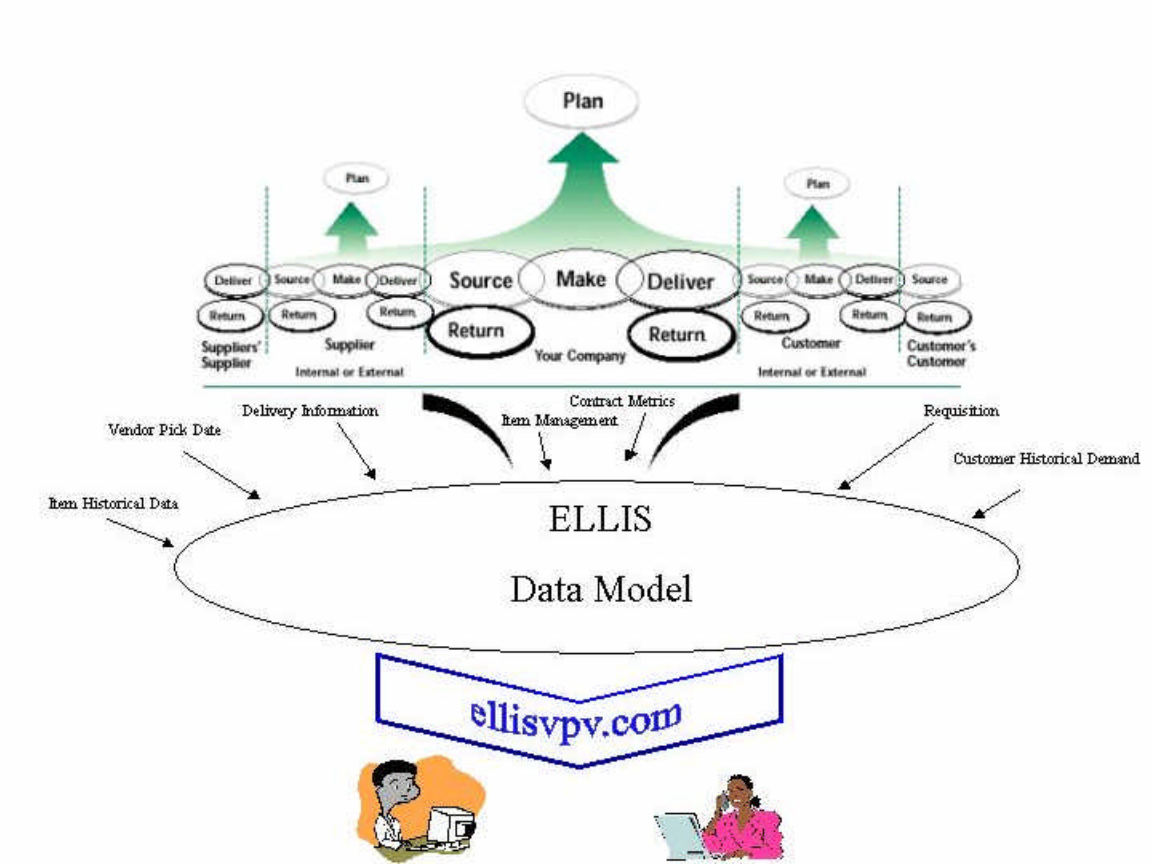
DLA's mission is to provide the very best value logistics support to America's Armed Forces, in peace and war, around the clock, around the world. An Agency of over 27,000 personnel, DLA supports over 1400 weapon systems with annual sales at almost $15 billion in FY 2000. DLA stands at the forefront of the revolution in electronic commerce and information management, making millions of critical supply items available to the warfighter worldwide at the click of a computer mouse.

4. Award Category

Operations –Department of Defense

5. Provide a brief description of the supply chain and the processes the submission spans.

The Department of Defense supply chain processes include all processes defined by the Supply Chain Operations Reference (SCOR) model. The Enterprise Linked Logistics Information Source (ELLIS) gathers data from each of the processes as shown below.



6. Provide the names of the Supply Chain Partners Organizations (external) involved in the project and indicate the number of people involved from each partner organization and the functional category of each.

External Partners	Number of People Involved	Functional Category
Lockheed Martin Air Logistics Center C-5 Program	5	Information Technology and Program Management
Boeing VPV Program	4	Information Technology and Program Management
MATCOM	1	Program Management
Downey Information Systems	3	Software Development and Logistics Analysis

7. Provide the names of the functional organizations (internal) involved in the project and indicate the number of people involved from each partner organization and the functional category of each.

Functional Organization	Number of people involved	Functional Category
DSCR Acquisition Support Division	**4**	**Program Management and IT**
DSCR Contracting	**4**	**Contracting Officers**
DAASC	**2**	**EDI and IT**

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Section 2 Implementation

1. Explain why the supply chain initiative was undertaken and how it was selected

Customers of the Department of Defense (DoD) logistics system are demanding improved visibility and performance in all areas of the supply chain.

ELLIS was undertaken to address the need for DLA enterprise-wide supply chain visibility and monitoring and control, where competitive sourcing results in long-term vendor relationships under which vendors own material and have the incentive to provide sustained product support in lieu of DOD wholesale stocks.

Performance Based Logistics is the concept by which DLA monitors and controls the enterprise-wide supply chain. Monitoring the supply chain will enable DLA customers to make smart maintenance decisions and will provide information to their own supply chain planning function. Supply Chain Council studies indicate that supply chain performance affects more than 85 percent of a manufacturer's costs and a large part of its revenues. Measuring supplier performance is a practical way to ameliorate the constricting supplier base of the Department of Defense.

Effective reengineering requires an understanding of the relationships among the supply chain processes. The Supply Chain Council's SCOR Model shows the dependencies of the processes. The ELLIS team focused on making the data from each of the processes visible to all stakeholders.

Supply Chain Visibility

The Defense Supply Center Richmond (DSCR) Acquisition Support Division conducted a survey of all supply chain stakeholders to determine their needs. The message was loud and clear - the stakeholders wanted reliable performance, and they wanted visibility of all links in the chain.

The ELLIS (Enterprise Linked Logistics Information Source) project was undertaken to enable the execution of the Performance Based Logistics contracts in DLA. ELLIS provides visibility of the supply chain enterprise and gathers data from all the systems contributing to the supply chain. ELLIS is web-based and Electronic Data Interchange (EDI) centric, providing worldwide access to the data through a single information source.

Today, visibility often means navigating unfamiliar systems and looking at data interpreted from different perspectives, used for different purposes and named differently. ELLIS brings data from multiple supply chain systems and interprets it consistently. The data is verified by the providing supply chain legacy system, and concurrence is gained on the ELLIS data and processes. For example, when DLA issues a delivery order, ELLIS is sent a copy of the order. ELLIS looks up the performance metrics based on item, supplier, and customer point in time and any other elements negotiated for the contract. The supplier acknowledges receipt of the order via EDI, and ELLIS is sent a copy setting up when the metrics clock starts. When the order is picked and ready to ship, ELLIS is sent a copy of the data and then when the item is shipped, ELLIS is sent a copy of the EDI transaction and tracking number from the carrier. Once the item is delivered, ELLIS is sent a copy of the delivery transaction by the transportation system. By receiving the basic data from the system that produces it, ELLIS achieves data integrity across the supply chain. Data comes from DLA, the customer, the supplier and the transporters.

Visibility Enables Collaboration

ELLIS manipulates the data to produce information according to the supply chain performance measurements agreed to by all participants in the supply chain. Since ELLIS stores all the historical performance information, it assembles trending data, which is used to identify supply chain optimization opportunities. Since all the stakeholders use the same information, optimization strategies are consistent.

Visibility Enables Confidence

One of the redundant stakeholder issues concerning the DoD supply chain is a lack of confidence in the data, especially forecasts and promised deliveries. Focused logistics in DSCR's Acquisition Support Division encourages confidence in the resulting information because the data is:

- Complete – end to end supply chain
- Verified - because data is from multiple sources
- Accurate - because the genesis of the data is the stakeholder's own systems

Visibility Enables Closely Aligned Metrics

Visibility enables consistency of metric monitoring leading to fine-tuning of the enterprise-wide supply chain.

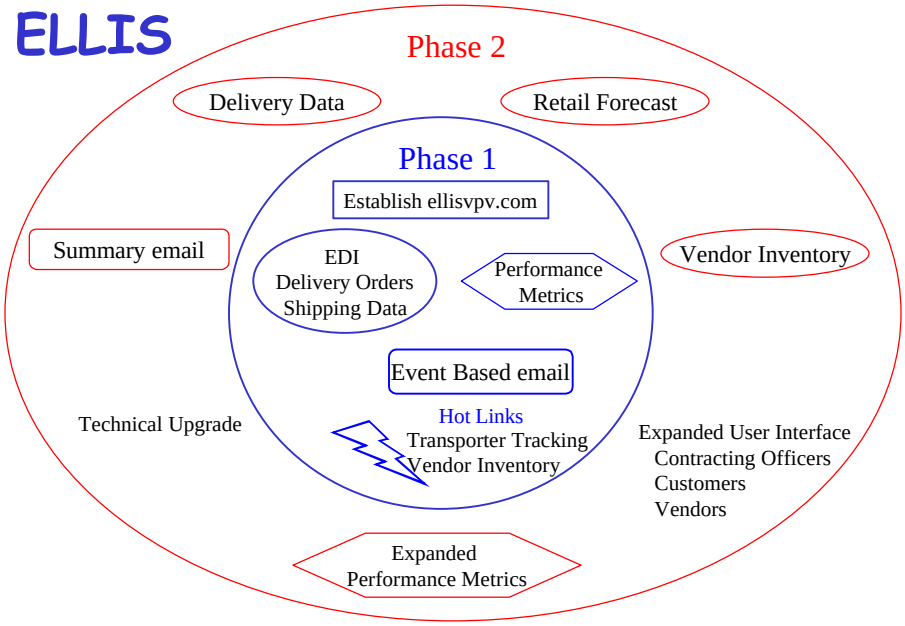
Visibility Enables Proactive Problem Resolution

Since the data comes from all parts of the supply chain enterprise, all participants in the supply chain are linked to ELLIS. When a problem occurs, ELLIS sends an event-based email to all concerned stakeholders identifying the problem and proposed solutions.

2. Indicate the duration of the project. Note if the project was a pilot that is being rolled out. Note if the project is ongoing / still in process.

ELLIS began as a study project in the year 2000 to determine the customer requirements in the Virtual Prime Vendor programs. Phase 1 of ELLIS fielded a functioning prototype and data model of the system including interfaces to customer, DLA and supplier data.

Phase 2 is ongoing. It expands the development to include more DLA Performance Based Logistics contracts. ELLIS will expand its data reach to further elements of the supply chain. The following graphic shows phased development of the data model.



3. Describe in detail, the process used to complete the initiative.

The processes used to form ELLIS are both functional and technical.

The functional processes:

- Obtain concurrence from the supply chain stakeholders to participate
- Define data requirements from each participating stakeholder's systems

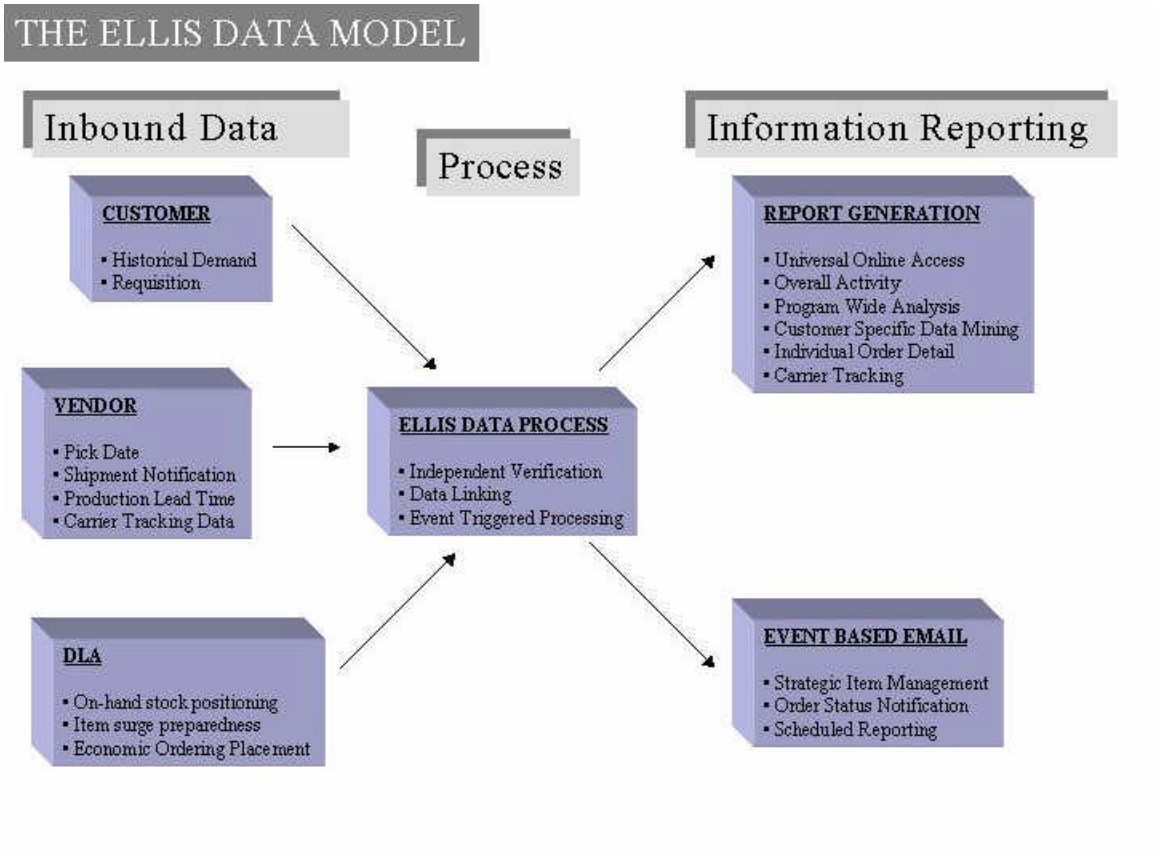
The functional process of ELLIS begins early in the contracting process. The team demonstrates ELLIS capabilities to the Contracting Officers early in the Statement of Work preparation, presolicitation stage. The team demonstrates ELLIS capabilities to the suppliers in the technical evaluation period immediately after contract award. The team continually collaborates with the ELLIS participants throughout the life of the contract, but especially in the early stages of contract performance.

The technical process – Construct the ELLIS Data Model

- Construct an input neutral system
- Be able to translate anything to anything

The ELLIS Data Model

The ELLIS Data Model captures data from all elements of the supply chain. ELLIS then serves as a data repository, processing station, and an information generation system. The Data Model is broken into inbound data, process and information reporting.



INBOUND DATA

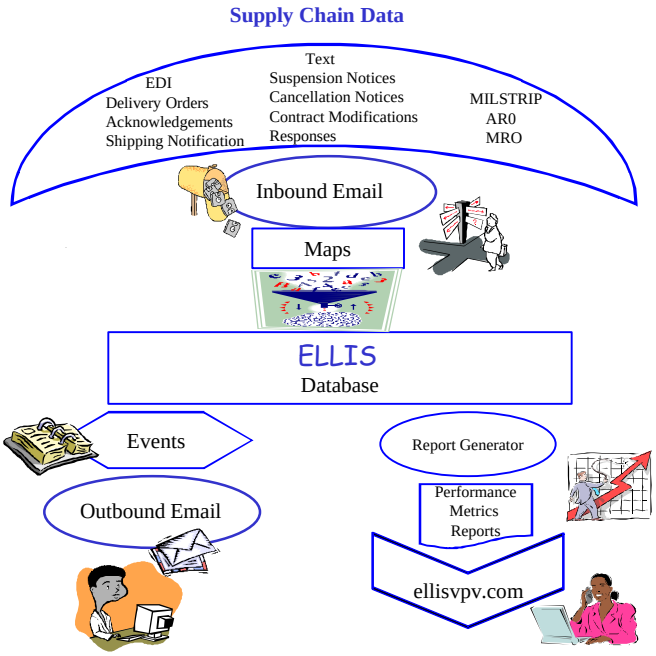
ELLIS gathers data from all points on the DLA supply chain. Data is sent in mutually agreed upon data interchange formats such as EDI as well as non-standard formats such as text-based email correspondence.

- Customer
  - Historical Demand – Allows for customer and supplier planning for strategic item management. In the pre-award stage of a partnership, the visibility into customer-level demand history allows for the optimal positioning of items in the Direct Vendor Delivery (DVD) system.
  - Requisition – EDI 850 delivery orders are received into ELLIS. The delivery order gives all stakeholders drill-down visibility into the order details such as priority, end-customer, and special order instructions including special operations.
- Supplier
  - Production Lead Time – Visibility into the item-level source supplier. Allows strategic stock planning for DLA as well as alternate source investigation.
  - Pick Date – Visibility into the date and time an order was ready for Government inspection at the supplier warehouse.
  - Shipment Notification – EDI 856 including the date and time that the order was shipped.
  - Carrier Tracking Data – Carrier tracking information from transporters. This allows customers to make informed maintenance decisions based on independently verified delivery status. The carrier data also allows strategic transportation decision making based on carrier past performance and destination location.
  - Logistics Response Time - Visibility of that period from receipt of the customer requisition to material delivery to the end user.
- DLA
  - On-hand Stock Position – In reply to: the pre-award stage, allows the supplier visibility into DLA stock position and ramp-up demand status.
  - Item Surge-preparedness Contracts – For items grouped by manufacturing characteristics, allows greater transparency into item classification by raw material and strategic ordering by commodity.
  - Economic Ordering Placement – Based on cross-customer ordering history, gives insight into the optimal ordering point for economic order quantity efficiency.

PROCESS

When ELLIS receives data from the stakeholder's systems in the supply chain, the ELLIS Model analyses the data and links the information. ELLIS mines through the data to report change in status and highlight components that may affect the supply chain process.

ELLIS
Overview



INFORMATION REPORTING

Through the ELLIS Web Portal and event-based email, ELLIS has created a virtual common marketplace to share supply chain data using the SCOR model. This data is shared in the following ways:

- Report Generation
  - Universal Online Access – Through the ELLIS website all partners in the supply chain have access to the same data in various formats, which may be customized.
  - Overall Activity – Gives counts and summaries of activity between the partners. Gives financial reconciliation data and contract-wide delivery order activity status.
  - Program Wide Analysis – Through data mining, ELLIS reports customizable queries to the end-user. Examples include delivery orders by end customer or performance for high priority delivery orders.

- Customer Specific Data Mining – Allows the user to drill down into the ELLIS data model to gain insight into activity on a set of defined data elements, such as activity, theater or project code performance.
- Individual Order Detail – Provides data on a delivery order from all major partners in the transaction including end-customer specifics, item history, metric performance of the order, and order status.
- Carrier Tracking – Reports order to delivery time on both the individual order level, as well as averaged over a universe of orders. Also gives visibility into carrier data on delivery status and overall carrier performance for better end-user planning.

- Event Based Email – Based on defined events, the ELLIS Data Model actively promotes dialogue among the strategic partners. Data is sent via email to the users, and responses to the emails are received into ELLIS and reported.
  - Strategic Item Management – Provides to both supplier and DLA item managers data on well and poor performing items so appropriate action can be taken to improve the contract performance.
  - Order Status Notification – Can be sent to the end-user on backorder status, as well as shipment notification so the appropriate repair decisions can be made.
  - Scheduled Reporting – Customizable reports can be sent to all users on a timed basis to give daily, weekly, or monthly status on a set of orders.

4. Identify significant challenges encountered, the problem resolution and the solutions. Identify best practices employed/developed.

The challenges encountered are both functional and technical.

Functional Challenge

The functional challenge revolves around overcoming reluctance on the individual stakeholder's part to share data without controlling the data. As the goal of ELLIS is to collect, analyze and display data, problem resolution demonstrated that ELLIS acts as a neutral third party.

Technical Challenge

The technical challenge was to make the data input channels into ELLIS as flexible as possible to facilitate data systems communication with ELLIS. The technical team surveyed the market for commercial off-the-shelf (COTS) data translation packages. We chose DELTA by Softshare. DELTA is a data mapping utility that will translate anything to anything. Making Delta an integral part of ELLIS made the job of convincing stakeholders to transmit their data easier.

Universal data accessibility was solved by web-enabling ELLIS. The web site is updated in real time as data comes into ELLIS.

5. Indicate metrics used to measure (a) progress and (b) success.

PROGRESS METRICS

Because ELLIS is an active project, metrics, such as achieving milestones, progress versus schedule, and budget variances, are used for measuring progress. The ELLIS project is on time and within budget.

Other metrics are specific to a contract implementation in ELLIS. The following DLA performance-based contracts are currently implemented in ELLIS:

- C-5
  - Supplier, Lockheed Martin Air Logistics Center
- F-15
  - Supplier, Boeing Aircraft
- Sikorsky Prime Supplier
  - Supplier, Sikorsky Helicopters

The schedule for additional projects for ELLIS is being finalized.

SUCCESS METRICS

Initial ELLIS data is being used to identify some inefficiencies in the enterprise-wide supply chain. ELLIS uses the SCOR model methodology as a tool for developing the framework for understanding the relationships between process metrics and enterprise-wide performance metrics. A SCOR model variant, such as the one created for the DoD by LMI, may offer more specifically applicable metrics for DLA and the Military Service customers.

6. Document and quantify cost and performance benefits, which should include Return on Investment of the Project and changes in the value of one or more of the SCOR Level 1 Metrics (not all metrics are required to be captured / reported)

COST AND PERFORMANCE BENEFITS

Cost benefits include elimination of the requirement for each Performance Based Logistics (PBL) contract to establish and maintain a web site for viability of material and performance tracking. The average cost saving for a 5 year contract is $400,000. Additionally, ELLIS provides assurance that vendor partnerships can be managed effectively including accurate determination of incentive awards for performance.

Visibility of performance metrics by vendors, customers, DLA contracting officers and senior management has resulted in consistent improvement in vendor performance and validated the feasibility of long-term vendor partnerships for weapons system technical parts support in lieu of DoD wholesale stocks.

SCOR Model Integration

ELLIS utilized the SCOR Model in developing best business practices. The SCOR Model is a process reference model designed for effective communication among supply-chain partners developed by the Supply Chain Council. ELLIS uses the SCOR model to manage the transfer

and sharing of supply chain data. As demonstrated below, ELLIS data comes from all supply chain participants through common data interchange formats. ELLIS transforms the data into information to deliver a common marketplace front end.

SCOR Process	Goal	ELLIS Implementation	Data Input	End Use
PLAN	Demand/Supply Planning and Management	Customer Forecast Data	Customer historical requisition data	Pre- and Post-Award Supplier Planning tool for supply and stock management
		Item Management/Stock Positioning	DLA On-hand inventory	Lead time and Backlog positioning for rapid upstart of the supply process
SOURCE	Sourcing Stocked, Make-to-Order, and Engineer-to-Order Product	Sourcing data, approved Supplier List	PID List (approved Supplier List)	Provides immediate tool for supplier decision-making and alternate source for inventory positioning
MAKE	Make-to-Stock, Make-to-Order, and Engineer-to-Order Production Execution	Federal Supply-Class information	DLA NSN Data	Assessment of Big-Surge capability through grouping of items by raw-material and manufacturing processes
DELIVER	Order, Warehouse, Transportation, and Installation Management for Stocked, Make-to-Order, and Engineer-to-Order Product	Supplier performance, Requisition tracking from order to delivery	Requisition (EDI-850), MRO	Delivery Order/ Materiel Release Order receipt upon Generation
			Supplier Acknowledgement (EDI-997)	Acknowledge Supplier Receipt of Delivery Order, Commences tracking and assessment of Contract Metrics

			Supplier Pick Data	Date Item was picked in warehouse for Government Review before shipment. Creates visibility into management of Supplier preparedness as well as impact of Government Review
			Shipment Data	Date Order Picked up for shipment, carrier information and management tool
			Delivery Data	In-process delivery tracking, including delivery date and acceptance by customer
			Customer/ Supplier Electronic Dialogue	Running commentary by Supplier and customer as to order status, and common marketplace for order visibility

7. Outline how the success of this effort supports the organizational objectives described in Section 1 Item 3.

DLA's mission is to provide the very best value logistics support to America's Armed Forces. To do that, DLA stands at the forefront of the revolution in electronic commerce and information management, making millions of critical supply items available to forces worldwide at the click of a computer mouse.

ELLIS serves to provide a web-enabled link to both contracting and shipment information and provides analysis of supply chain performance. The system provides a vital tool in providing outstanding customer service to America's war fighters.

Section 3 Transference

1. Describe the efforts to share lessons from this effort with other internal organizations.

Performance Based Logistics contracting is accepted across DoD as the preferred way to conduct business today and in the future. ELLIS, as an enabler to measure performance, is on the leading edge of promoting supply chain visibility and collaboration among supply chain partners.

The Defense Supply Center Richmond (DSCR) Acquisition Support Division (ASD) created ELLIS. The DSCR ASD team continually briefs others throughout the DLA Enterprise about the system capabilities and lessons learned, especially contracting metric lessons. The reaction throughout the Enterprise has been extremely positive to date.

2. Indicate how this initiative can be transferred to other organizations, and specify the likely candidates for transference.

ELLIS is an input-neutral system focused on supply chain performance and thus can be used to monitor performance on any contract. The DSCR ELLIS team is scheduled to brief the Navy Inventory Control Point in March 2002. Further, the Commander, Naval Supply Systems Command, has a strategic objective requirement for a performance-based, vendor supply chain monitoring system.